

GRACE Science Data System Monthly Report

February 2004

Prepared by:	Frank Flechtner	GFZ	flechtne@gfz-potsdam.de
Contributions by:	Srinivas Bettadpur	UTCSR	srinivas@csr.utexas.edu
	Mike Watkins	JPL	michael.m.watkins@jpl.nasa.gov
	Gerhard Kruizinga	JPL	gerhard.kruizinga@jpl.nasa.gov
Approved by:	Byron Tapley	UTCSR	tapley@csr.utexas.edu
	Christoph Reigber	GFZ	reigber@gfz-potsdam.de

Reminder: The GRACE mission is still in validation phase. Therefore this newsletter, as well as the GRACE data products, are for the Science Team's use only.

Satellite Science Relevant Events:

- K-Band ranging and full science data collection was restored on February 04.
- Initial analysis of January 29 center of mass (CoM) calibration manoeuvres indicate that the present CoM offset values in along-track direction are 77 and 14 μm for GRACE-A and GRACE-B, respectively. These values are within the requirement of 100 μm and within 20 μm of values predicted by the CoM tracking model.
- Star Camera Software was updated on February 9 on both satellites and has improved SCA data quality. Now both satellites are using the same IPU software.
- On February 13 the SCA head #1 threshold value has been reduced from 21 to 19 to increase sensitivity.
- Since February 19 the K-band Sampler Unit is under thermal control. Future evaluations will be done to assess improvements in the KBR data.
- AOCS experiments were conducted to refine the magnetic controller settings. As a result, the angular accelerations of the satellite reduced. This has the consequence (along with the CoM offset) of reducing effective noise in the accelerometer observations.
- Since February 19 the GRACE satellites are in full-sun orbit and are expected to remain so until March 28.
- The GRACE-1 Brower mean orbital elements on March 01, 2004 00:00:00 were as follows:
A [m] = 472620.708
E [-] = 0.001942
I [°] = 89.008053
The satellites maintained a 236 km separation, with a change rate of near to 0 km/day

Level-0 raw data dump reception statistics at DLR ground stations Weilheim and Neustrelitz:

GRACE-1 Housekeeping:	99.60 %
GRACE-1 Science:	100.00 %
GRACE-2 Housekeeping:	99.56 %
GRACE-2 Science:	100.00 %

Level-1 Data Processing:

- Level-1B instrument data have been processed at JPL and archived at GRACE-ISDC and JPL PO.DAAC.

The following table gives a statistics of the available KBR1B products. The columns in the table are:

- A) KBR1B product name
- B) Total arc length with data (hours)
- C) Number of observations used in residual calculation
- D) KBR-GPS range residual RMS (cm)
- E) minimum KBR-GPS range residual (cm)
- F) maximum KBR-GPS range residual (cm)
- G) number of continuous segments in the KBR product

A	B	C	D	E	F	G
KBR1B_2004-02-01_X_00.dat	---	not available	----			
KBR1B_2004-02-02_X_00.dat	---	not available	----			
KBR1B_2004-02-03_X_00.dat	2.9	2058	1.58	-2.3	3.2	1
KBR1B_2004-02-04_X_00.dat	24.0	17265	1.42	-3.9	3.8	2
KBR1B_2004-02-05_X_00.dat	24.0	17265	2.13	-5.6	5.7	2
KBR1B_2004-02-06_X_00.dat	24.0	17144	1.52	-5.8	5.1	3
KBR1B_2004-02-07_X_00.dat	24.0	17280	1.84	-4.9	5.7	1
KBR1B_2004-02-08_X_00.dat	23.4	16775	1.78	-5.4	5.2	2
KBR1B_2004-02-09_X_00.dat	23.7	17055	1.69	-4.6	4.4	3
KBR1B_2004-02-10_X_00.dat	24.0	17260	1.60	-4.8	5.0	1
KBR1B_2004-02-11_X_00.dat	24.0	17244	1.65	-4.1	4.8	2
KBR1B_2004-02-12_X_00.dat	24.0	17241	2.70	-11.8	7.9	1
KBR1B_2004-02-13_X_00.dat	24.0	17258	1.59	-5.5	4.7	1
KBR1B_2004-02-14_X_00.dat	23.9	17146	1.39	-4.7	3.3	2
KBR1B_2004-02-15_X_00.dat	23.8	17147	1.71	-4.5	4.8	4
KBR1B_2004-02-16_X_00.dat	24.0	17260	1.71	-4.2	5.2	1
KBR1B_2004-02-17_X_00.dat	24.0	17240	3.97	-24.2	13.4	1
KBR1B_2004-02-18_X_00.dat	23.9	17206	1.81	-3.7	4.9	3
KBR1B_2004-02-19_X_00.dat	23.5	16914	1.65	-3.5	5.3	3
KBR1B_2004-02-20_X_00.dat	24.0	17280	1.50	-3.8	5.0	1
KBR1B_2004-02-21_X_00.dat	---	not yet processed	----			
...						
KBR1B_2004-02-29_X_00.dat	---	not yet processed	----			

- Additionally all level-1B barotropic sea level products (OCN1B) and de-aliasing products (AOD1B) until February 29, have been calculated by GFZ and archived at GRACE-ISDC.

Level-2 Data Processing:

- All 3 L2 centers at CSR, JPL and GFZ concentrated on improvements in the gravity model product quality and catching up on the remaining monthly fields data processing

GRACE Product Distribution:

On February 20 a first set of L1B data (July, August, September and October 2003) and different JPL validation gravity fields have been made available to the GRACE Science Team.

Additionally on February 4 the April/May monthly CSR gravity field has been updated and a new GFZ mean field based on 110 days of data has been provided on February 29. All products are available at JPL PO.DAAC and ISDC. The status on February 29 was as follows (new or updated products marked):

The characters in brackets have the following meaning:

- A: non-tidal atmosphere geopotential coefficients averaged over time period (GAA product) are also available for this product
- B: non-tidal ocean geopotential coefficients averaged over time period (GAB product) also are available for this product
- C: non-tidal atmosphere plus ocean geopotential coefficients averaged over time period (GAC product) are also available for this product

CSR Gravity Satellite only Monthly solutions (GSM):

GSM-2_0031_2002104-2002138_UTCSR_0000_0001	April/May 2002 (C)
GSM-2_0028_2002213-2002243_UTCSR_0000_0001	August 2002 (C)
GSM-2_0026_2002305-2002334_UTCSR_0000_0001	November 2002 (C)
GSM-2_0022_2003035-2003059_UTCSR_0000_0001	February 2003 (C)
GSM-2_0031_2003060-2003090_UTCSR_0000_0001	March 2003 (C)
GSM-2_0028_2003091-2003119_UTCSR_0000_0001	April 2003 (C)
GSM-2_0027_2003114-2003140_UTCSR_0000_0001	April/May 2003 (updated, C)
GSM-2_0030_2003182-2003212_UTCSR_0000_0001	July 2003 (C)
GSM-2_0030_2003213-2003243_UTCSR_0000_0001	August 2003 (C)
GSM-2_0027_2003244-2003273_UTCSR_0000_0001	September 2003 (C)
GSM-2_0031_2003274-2003304_UTCSR_0000_0001	October 2003 (C)

CSR Gravity satellite plus terrestrial data Combination Mean field (GCM):

GCM-2_0111_2002096-2002332_UTCSR_0000_0000	April 02 – Nov. 03
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GFZ Gravity Satellite only Monthly solutions (GSM):

GSM-2_0025_2002214-2002243_EIGEN_G----_0001	August 2002 (A,B,C)
GSM-2_0023_2003214-2003242_EIGEN_G----_0001	August 2003 (A,B,C)

GFZ Gravity Satellite only Mean field (GSM):

GSM-2_0066_2002214-2003242_EIGEN_G----_0001	Aug. 02 – Aug. 03 (A,B,C)
GSM-2_0110_2002214-2003242_EIGEN_G----_0001	Aug. 02 – Aug. 03 (new, A,B,C)

JPL Gravity Satellite only Monthly solutions (GSM):

GSM-2_0030_2003182-2003212_JPLGM_G----_0001	July 2003 (new)
GSM-2_0027_2003213-2003243_JPLGM_G----_0001	August 2003 (new)
GSM-2_0027_2003244-2003273_JPLGM_G----_0001	September 2003 (new)
GSM-2_0030_2003274-2003304_JPLGM_G----_0001	October 2003 (new)

JPL Gravity Satellite only Mean field (GSM):

GSM-2_0191_2003091-2003334_JPLGM_G----_0001 Apr. 03 – Nov. 03 (new)

Corresponding GFZ, CSR and JPL Level-2 release notes have been provided on the ISDC and PO.DAAC web sites.

Miscellaneous:

- Joint CHAMP and GRACE Science Team Meeting is scheduled for July 6-8, 2004 at GFZ Potsdam with registration, poster mounting and ice breaker party on July 5, afternoon to evening